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ABSTRACT

An action research model of program planning and inservice teacher education is presented. The model systematically includes three groups of participants--teachers and paraprofessionals, parents and members of the community, and university and administrative personnel, and is called the "triangulation" model. Inherent in the design is the potential for providing continuous feedback and input, from each of the three groups, thus producing a source of information for data-based decision-making. The model is used as a planning vehicle for a federally funded Teacher Corps project jointly operated by the Akron Public schools, the Akron community, and Kent State University. (Author/LH)

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TRIANGULATION: A STRATEGY FOR FORMATIVE ACTION RESEARCH ON IN-SERVICE EDUCATION

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Kent State University Teacher Corps Papers - No. 3

Introduction

The purpose of this paper is to present an action research model of program planning and in-service teacher education. The model is unique in that it systematically includes three groups of participants: teachers and paraprofessionals, parents and members of the community, and university and administrative personnel. Inherent in the model is the potential for providing continuous input and feedback which produces a source of information for data-based decision-making. This model is presently being used as the planning vehicle for a federally funded Teacher Corps project which is being jointly carried out by the Akron Public Schools, the Akron community, and Kent State University. Because it is based upon the systematic planning among the three distinctly different groups (schools, community, and university), this model will be referred to as triangulation. Before we discuss the triangulation model in detail, however, let us explain why we believe this model to be so extremely suitable when dealing with inservice education.

Inservice Education - A Priority

Inservice education for school faculties is rapidly becoming a major priority among educators and its value is being affirmed by the general public. Advocates for the professional development of teachers are appearing among diverse groups. Teacher organizations are now in a position to voice their concerns regarding common practices and suggest new directions. Through successful political lobbies at the state and national levels, teacher organizations have gained the right to participate directly in the governance of standards for preparing teachers and to determine policy in federally funded inservice programs such as those implemented according to the Teacher Centers legislation.

Universities are giving inservice education a high priority in their programming related to teacher education. In the past major personnel, budget, and time commitments

in colleges of education have gone to undergraduate teacher preparation. The general decline in teacher education undergraduate enrollment over the past five years has caused universities to reexamine continuing education needs of practicing teachers. The increased contact between university professors and classroom teachers which has resulted from more and earlier field experience programs for undergraduates has fostered a new sense of colleagueship. Professors have become more fully aware of the myriad dimensions of the classroom and their implications for practicing teachers. The professional teacher is being made more aware of the advantages of continuing education experiences through increased contacts with preservice teachers. The university, therefore, is in an excellent position to provide and receive input for developing inservice programs through collaboration.

School administrators and the communities they serve have also contributed to the increased importance of inservice education. Administrators and supervisors are recognizing the need for school districts to share in the improvement of teachers' competencies. Master contracts are beginning to include support provisions and salary schedule considerations for inservice experiences.

These major groups which directly influence inservice education have made it a priority for the immediate future. The current climate would support the statement made by National Education Association, Project Associate, Roy Edelfelt (1974):

> The inservice education of teachers will be the major focus in teacher education for the next decade... I believe it will prove accurate because of the conditions of the teaching profession, the state of education, the plight of teacher education, and the will of the public. (p. 250).

The success of inservice education in the years ahead will depend upon the manner in which all participants share in the planning and the implementation of programs.

The quality of inservice programs in schools has been described as mixed by King, Hayes, and Newman (1977). They provide descriptions of "highly regarded" and "ineffective" programs. In the former category terms such as relevant, well-planned, responsive, and challenging were used. The latter group of programs was described as coercive, sterile, administrator dominated, and boring. The challenge faced by the developers of inservice programs is clearly to create programs that will be perceived as responsive and well-planned by each of the involved groups. We are proposing that this challenge can be met through collaborative planning.

Triangulation - A Successful Strategy

The first task in the successful development of an inservice program is th selection of a collaborative decision-making strategy which involves all of the groups concerned with inservice education (i.e., the school system, the university, and the community). As most of us who deal with inservice education know, it is much easier to obtain a consesus concerning the need for such a strategy from all groups involved than it is to implement a specific strategy. A successful collaborative strategy has to provide all participants with an opportunity to contribute to the conceptualization, design, implementation and evaluation activities associated with an inservice education program. Furthermore, the strategy needs to be flexible enough to respond to the unique needs, both real and perceived, of all participants. A collaborative planning strategy has recently been developed that can create the conditions for experiencing success with inservice education.

John Elliott, a British educator, received a grant in the early 1970's from the Ford Foundation to implement a problem-solving approach in classrooms. He has described the major features of the approach as 1) focusing on practical problems defined by the teachers and 2) developing collaborative relations between teachers and outsiders who establish a communication pattern which seeks solutions to teachers'

problems (Elliott, 1976). During the years since 1973 this problem-solving approach has become known as triangulation. Elliott (1976) describes the triangulation process as follows:

> Triangulation involves gathering accounts of a teaching situation from three quite different points of view, namely, those of teacher, students, and participant-observers. Each point of the triangle stands in a unique position with respect to access to relevant data about a teaching situation: Teachers, via introspection, have the best access to their own intentions and aims in the situation; students are in the best position to explain how teachers' actions influence the way they respond in the situation; participant-observers can best collect data about the observable features of the interaction between teachers and students. (p. 22).

In Elliott's early work the individual classroom teacher was the primary focus of the triangulation process. His original triangulation project involved approximately 40 teachers and their classrooms with the ultimate goals of identifying and focusing attention on the practical concerns of teachers. As we first began reviewing this strategy we were impressed by the manner in which triangulation encouraged collaboration, but we were troubled both by the lack of generalizability that was produced by the classroom focus and by the cost factor. We therefore, for our purposes in planning an inservice program, made several modifications to Elliott's triangulation process. The first modification was to alter the focus on the process from the classroom to the building and school community levels. The second modification was to encourage groups rather than individuals to represent the different points of view. Finally, the student information used by Elliott, although still sought, has been generally replaced by both parents and non-parents since community can provide insight toward the school level concerns. Because the focus of the project was at the building level rather than that of the individual classroom teacher, we felt that these modifications were much less threatening and provided a database that was more generalizable than that used by Elliott. Some working assumptions

of these modifications have included the following:

1. The best way to improve practices lies not in controlling people's behavior nor in adopting a curriculum which controls them. The best way to improve practice is helping individuals control their own behavior by becoming more aware of what they are doing.

2. The quality of teacher's judgement can be enhanced by helping each other clarify the values and principles implicit in complex ideas. Quality of judgement includes gaining greater control over classroom goal setting and greater control over accomplishment with students.

3. Teachers cannot accomplish the task of goal setting and goal achievement alone. Each person needs the opportunity to compare his own account of classroom events with other standpoints. In this way a person at one end of the triangle has an opportunity to test and perhaps revise it on the basis of more complete data. (Wallat, 1978, p. 5).

Teacher Corps - Focus on Inservice Education

Teacher Corps, a federally funded program established by Congress in 1965, is aimed at the training and retraining of classroom teachers. Under new legislation, Teacher Corps has changed its program from two-year projects to five-year projects. The first year of each new project is to be a planning year. The purpose of the planning year is to provide each project site with the opportunity to plan inservice programs for better utilization of teachers, teacher's aides, and other educational personnel in grades K through 12. Four projects were funded in the State of Ohio in 1978: Ashland College, Kent State University, Ohio State University, and Youngstown State University. Each project is required by law to be operated jointly by the sponsoring university, the local school district, and members of the community served by the school district. The mandated joint operation provides the three positions for instituting triangulation.

The nature of the triangulation strategy provides a structure that can be applied to the inservice planning within the context of the Akron Public Schools/ Community/Kent State University Urban Teacher Corps Project. Collaboration among teachers builds peer support for examining classroom behavior and exploring its meaning for teaching and subsequent planning for inservice. The central role assumed by members of community adds yet another dimension to the triangulation process. When community members and professional educators meet, both parties maintain diaries and participant observers record events in a log. The information generated from these sources serves as a data base for decision-making (e.g. Are members of community providing input into the decision-making process? How do educators react to input from the community members regarding classroom practices and inservice education? Are listening skills employed by both groups?) Data generated from this process guide participants' systematic reflection about behavior in meetings between community members and professional educators. The collaborative nature of the information gathering process reduces the connotations of judgement that often arises when other procedures are employed.

By using triangulation strategy as a central strategy for the Akron Public Schools/Community/Kent State University Urban Teacher Corps Project, a built in action research procedure is immediately available. Information generated by action research has at least three results that will benefit inservice planning. First, the diagnosis of problems is built into every element of the program. The systematic reflection is the setting in which the problems are diagnosed. Second, the entire project experiences an on-going renewal process through the constant flow of information. With its beginnings in individual classrooms and at individual meetings, the change process involving behavior and beliefs pervades the entire structure of the project. Finally, misconceptions regarding the inservice mission of the Teacher Corps Project are quickly identified when information passes through the

triangulation process. Definitions of the project's mission are always current and known to all three groups in the triad. These benefits from the implementation of triangulation come about because the process is collaborative rather than hierarchically structured.

The triad for the overall operation of the Project includes the following:

1. representatives of the Akron cluster schools;
2. representatives of the school community; and
3. representatives of Kent State University.

Each group represents a unique position with respect to access to relevant information about a teaching situation. The school representative best understands the goals and intentions of the schools. The community members are in the best position to explain how the actions of the schools influence student behavior outside the classroom. The University representatives, who assumes what Elliott describes as a participant-observer role, is in the best position to collect information about observable features of the interaction between school and community representatives.

Planning with Triangulation - The Program

The triangulation process, when applied to planning inservice education is a series of actions which attempts to develop professional activities which are defined by Elliott (1976) as "enabling, fostering, or providing opportunities for professional growth and development". This process for creating professional growth and development within the framework of the Akron Public Schools/Community/Kent State University Urban Teacher Corps Project consists of three cyclic steps: 1) assessment, 2) planning, and 3) implementation. The cycles are illustrated in Figure 1. The advantage of this strategy is that it begins with participants assessing their own goals and present practices. Subsequently, the assessment is used to plan an inservice intervention.

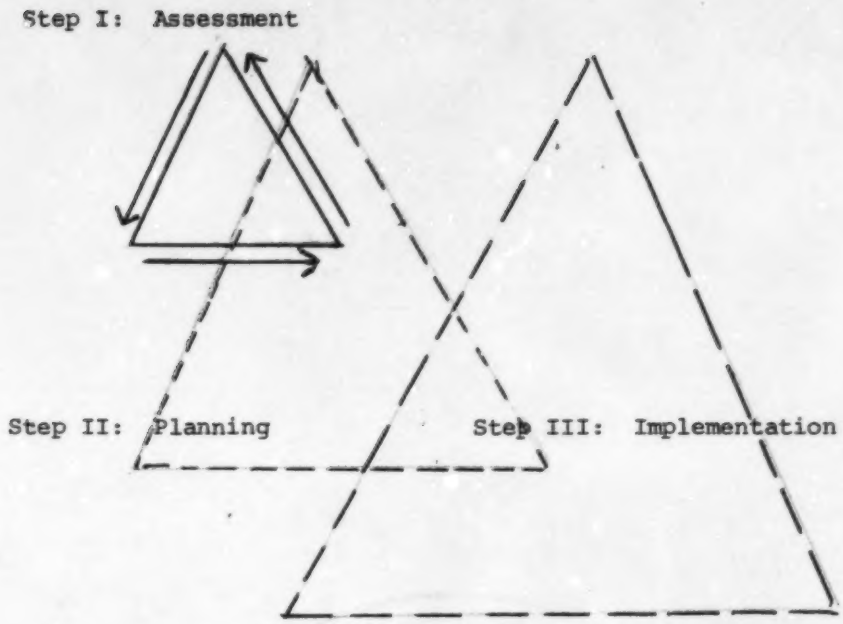

Figure I: Cyclic Steps of the Akron Public Schools/Community/Kent State University Triangulation Process

Finally, the decision is made concerning who will implement the plans. After the plans have been implemented, the cycle repeats itself for needed modifications or revisions.

Step I - Assessment. The purpose of assessment is to identify and diagnose those areas which merit inservice activities and to explore how those areas can be addressed. Initially, all information that is available about a classroom activity is collected and analyzed. The analysis, of course, follows the procedures described above for input from participant-observers. The focus of these observations is the generation of hypotheses regarding successful and unsuccessful teaching activities and their generalizability to other classrooms.

The success of the assessment step is enhanced by the use of a variety of methods for gathering information on classroom practices. We have already mentioned teacher diaries and logs as useful data-gathering techniques. Students are also in

a position to identify significant aspects of classroom practices and their perceptions can be recorded in pupil diaries, audio tapes and video tapes. Records of triad discussion about classroom activities provide another valuable source of information. Finally, the triad participants can produce case studies of problems and strategies based upon classroom experience which each member of the triad would have an opportunity to review and propose revisions. Training in the use of these methods for gathering assessment information is a part of the training for the use of the triangulation strategy.

Step II - Planning. The purpose of planning is to develop practical hypotheses based upon the assessment information and to identify how the problems might be resolved through inservice education. Special emphasis is placed on developing "enabling" activities that can be generalized to a wide number of classrooms. These activities are the result of questions, suggestions, and input from teachers, community members, administrators, and university personnel. When this is done with triangulation, the observers and interacters become a planning committee. The outcome of a planning meeting might be the development of experiences for teachers dealing with diagnostic and prescriptive instruction or the adoption of instructional management ideas that have been tried in a limited number of classrooms. If experimental inservice interventions prove successful they are then made available to the entire teaching staff.

Step III - Implementation. The purpose of implementation is to initiate the planned activities according to a calendar with fixed review dates. The purpose of well-established reviews is to identify the most successful inservice activities. Demonstration sites are also established to focus on the most generalizable results. In those situations where desired outcomes, as defined by the results of triangulation, are not being realized, the overall cycle would be initiated again - assessment, planning, and implementation. These steps will be repeated at least once a year during the five years of the project.

Summary

Inservice education planned by administrators often meets administrative needs without dealing with the real and perceived needs of teachers. Unsystematic attempts to draw teachers into inservice planning may result in cosmetic programming rather than functional and substantive experiences. When left to the initiative of institutions of higher education, idealized activities can be planned, to which teachers cannot respond because they do not relate to real problems in the classroom. Attempts to develop inservice education on the basis of pressures from parents and the community are also actions pointed toward failure. In each of these negative situations it is apparent that shared decision making is not present.

Triangulation follows a cyclic process of assessment, planning, and implementation which has four important consequences. First, the diagnosis of problems is built into every element of the inservice planning activity, and systematic reflection becomes the setting in which the problems can be diagnosed. Second, all participants benefit from the ongoing renewal process based on the constant flow of information. Third, the development of plans are carried out by those who will be participating in the program rather than by outsiders. Finally, misconceptions regarding the purpose of the Teacher Corps Project will be quickly identified in the triangulation process.

A strategy for planning successful inservice education has been outlined in this article which focuses on the joint participation of all groups with an investment in the education enterprise at the local district level. The collaborative process produces information about classroom practices and problems. Dialogue among various groups produces the framework for planning inservice activities. The goal of collaborative planning of inservice education becomes information-based decision making without domination by a single decision-making group.

In the previous section of this paper we have dealt with triangulation as an approach to in-service education. The paper has emphasized the cooperative aspects of assessment, planning, and implementation. In this section we shall look at triangulation as a participatory model for action research.

Action Research Rediscovered

Action research has been part of an important tradition in the broad field of educational research, or more properly curriculum research. In many respects, however, its history is like a comet that burst upon the educational scene in the mid 1950's. The word comet is used intentionally, for action research became an important phenomenon for a period of about ten years and then seemed to disappear entirely from the scene, only to reappear again some two decades later. Curiously, there is little mention of action research in the professional literature beyond 1960. It is important to pause for a moment to consider this history of action research for, as Santayana has said, "those who are ignorant of the history of the past are condemned to repeat it."

The term, "action research" is best known from Stephen Corey's (1953) major work, Action Research to Improve School Practices. Corey defined action research as the study of immediate, practical problems of the school in contrast to "fundamental research" that was concerned with theoretical problems of a more generalizable nature. It is not that Corey denied the importance of fundamental or theoretical research, but instead held that too often its results did not help shed light upon the important and practical problems facing classroom teachers. Some years earlier, Kurt Lewin (1946) had used the term "action research" to refer to the procedures for planning and carrying out any large social operation. Thelen (1948) described it as a kind of "engineering research" that could be used in curriculum development.

One of the outgrowths of the Progressive Education period was the increasing involvement of teachers in cooperative curriculum development in many school districts in the late 1940's. The principles of democratic curriculum development held that those most directly concerned with implementing new curriculum should be increasingly involved in the study, analysis and development of curriculum programs and other improvements in school practices. Theoretical direction was supplied by the studies of the Horace Mann - Lincoln Institute of School Experimentation at Teachers College, Columbia University. The work by Stratemeyer, Forkner and McKim (1948), Developing a Curriculum for Modern Living, set theoretical dimensions for how the curriculum might look when developed cooperatively with teachers, pupils, and curriculum experts. At the same time, work on the human relations aspect of the cooperative curriculum process was developed by Bennes and Muntyan (1951) based on studies from the newly emerging work in group dynamics, and by Taba and others (1951) based on inter-group relations work.

Three of the most extensive action research studies to be undertaken at the time were developed at the Horace Mann - Lincoln Institute in the early 1950's. Each of them represents an extraordinary combination of both theoretical and applied research, using a methodology which involved teachers, pupils, parents and consultants working together on common problems. The first of these was by Ruth Cunningham and associates (1951), Understanding of Group Behavior of Boys and Girls. This study examined the importance of goals in determining behavior and the effect of goals in group interaction. The second was a study by Alice Miel and associates (1952), Cooperative Procedures in Learning, which dealt with the problem of involving pupils in teacher-pupil planning. It studied the development of children's group membership skills including pupil leadership and cooperative group working relations. Miel's study examined a number of ways in which the emerging body of research on leadership and group dynamics could contribute to curriculum development and instructional practices at a time when curriculum specialists were advocating a student centered approach to learning, the

unit method of teaching, and a strong reliance upon pupil-teacher planning. This type of research was essential to put into practice the theoretical developments advocated in the curriculum literature. A third such major study was done by Foshay and Wann (1954), Children's Social Values. This study reflected the then current concern of educators with attitudes and values of students in the schools[1] and attempted to examine ways in which the school could help children become more generous, more considerate, more dependable and honest, and more democratic. It faced directly the problem of dealing with the conflicting values of the school setting and the personal problems of teachers in changing themselves as they attempted to change the curriculum. Many other such studies are cited by McKim (1957) in an excellent review of the curriculum history of this period.

Corey's (1953) book gave rise to a host of other materials on cooperative curriculum research. Passow, Miles, and Corey (1955) published an important volume on Training Curriculum Leaders for Cooperative Research. This book reflected the best of current research both in the field of curriculum development and also in human relations training and provided an important model for leadership training institutes that were soon to be developed. Shortly thereafter the National Society for the Study of Education published a yearbook on In-Service Education in 1957 with a chapter by Miles and Passow (1957) devoted to training for leadership skills in curriculum. Remarkable for its comprehensiveness was the ASCD yearbook, Research for Curriculum Development, also published in 1957. Hilda Taba's (1957) chapter on problem identification provided clear and specific examples of how action research could be undertaken using the expressed problems of teachers and involving them directly in the process. Mathew Miles (1957) in a chapter on human relations in cooperative research summarized and applied the growing body of research in group

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[1](Note that only a few years earlier the American Association of School Administrators and the National Education Association had jointly published a policy statement on Moral and Spiritual Values in Education which reflected the increasing concern of educational leaders for development of values in the period immediately after World War II.)

dynamics, small group process, and human relations training to action research situations. In the same yearbook, Miles and Corey (1957) provided a detailed analysis and evaluation of the first leadership training institute for cooperative curriculum research. This institute provided training in research techniques, human relations and group dynamics for a group of fifty curriculum leaders from across the nation. The document is impressive in the way it built into the training the best knowledge of curriculum research and group process skills then available from such centers as the Horace Mann - Lincoln Institute, the National Training Laboratory at Bethel, Maine. It also included the full report of an evaluation system that provided detailed information on pre and post test scores by participants on a variety of variables related to curriculum research and training in human relations skills.

What has happened to action research since this great flurry of activity in 1957? Hardly a word about it appears in the professional literature since then. A. S. Barr (1960) cited Corey's book (1953) and gave action research only a passing reference in the third edition of the Encyclopedia of Educational Research. Mouly (1969) referred briefly to action research in the fourth edition of the Encyclopedia of Educational Research, criticizing it more from the standpoint of its methodological limitations and the problems involved with generalizing its findings beyond the setting in which it was undertaken. No mention of action research appears at all in the 10 volume Encyclopedia of Education published in 1972.

One need only to recall that 1957 was the year in which the Soviet Sputnik was launched. It also was another comet on the educational scene which quickly produced a wave of curriculum reaction with the aim that America should catch up with Russia in scientific technology. The National Defense Education Act was passed in 1958. The National Science Foundation soon began to fund curriculum developments considered to be in the national interest including the now famous Woods Hole Conference on Cape Cod in September 1959 attended by some 35 scientists, scholars, and educators to discuss how education in science might be improved in elementary and secondary schools. Jerome Bruner's (1960) report of that conference The Process of Education touched off

a whole new era in curriculum development in the fields of the physical sciences, particularly Physics, Chemistry and Mathematics, and later in the social sciences and foreign languages, especially Russian, Chinese, and the languages of the Third World countries. These curriculum developments were marked by a new combination of scholars from the various disciplines, carefully selected classroom teachers, and a new group of curriculum developers skilled in material development and instructional design. One of the most notable of these groups was the Educational Development Corporation of Cambridge, Mass., headed by Jerome Zacharrias, a leading physicist from M.I.T. EDC produced such new programs as PSSC, BSCS, and later Man: A Course of Study (MACOS). Entirely missing from such new groups were the traditional school persons responsible for curriculum development, school administrators, or those professional organizations such as ASCD and NEA which had devoted many years to the field of curriculum development.

The subsequent history of this curriculum period is well known. Few of the many alphabet curriculum programs developed during this period have had any lasting impact in the schools. If anything, many of the materials can still be found on the shelves gathering dust. The movement to incorporate the concepts, generalizations, and methodologies of the scholarly disciplines, of which this author was a part, has had disappointingly little impact upon the curriculum development in schools and in the instructional practices of teachers.

Finally, the experimental method adopted largely from psychology, and accompanied by complex statistical methods for analysis of data, emerged in the late 1950's and 60's as the dominant methodology of educational research within such key leadership groups as the American Educational Research Association -- almost to the complete exclusion of historical, descriptive, ethnographic and other "soft" methods of research. Campbell and Stanley's (1963) monograph on experimental design became the bible in research methodology. In this era of a new "scientism" there was no room for the largely descriptive, problem-solving orientation of action research.

ACTION RESEARCH: A LOOK TOWARD THE FUTURE

What is the import of this recital of educational history? Surely not to lament the past! Rather, it is an effort to be sure that we know from whence we have come as we reassert the need for action research, and that we do not reinvent the wheel in our travel along the path of in-service education. As Harry Broudy quipped at a recent conference, "Only in Education is ignorance of the past the Mother of innovation."[2]

The irony in all of this is that in reviewing the writings of John Elliott, there is not a single reference to the early history of action research. This certainly does seem to be a curious omission in the development of curriculum research and in-service education. The point of this paper has been to identify clearly that we have been there once before, that a great deal of knowledge about the process, now called "Triangulation", has already been developed, and it behooves us to go ahead recognizing the great strides that had been made in the past and to learn from them.

The model described earlier in this paper that reflects a cooperative process between school personnel, university researchers and community members is not at all unlike the model of action research as occurred in the mid 1950's. It includes a cluster of schools in the North Hill area of Akron, Ohio, and it involves a group of elementary schools, a middle school and a senior high school. As a young teacher this author participated in the action research programs in the Great Neck, New York Public Schools. Specialists in curriculum research such as Alice Miel from Columbia University and Alice Kaliker from New York University served as consultants to teams of teachers and curriculum developers. I had the exhilarating and heady experience of working on the development of a new social studies program and on another study related to grading and reporting practices. Both of these were implemented the

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[2]Harry Broudy, "Curriculum Implications of Minimum Compentency Testing", paper at the AERA Conference on Minimum Competency Testing, Washington, D.C., October 12 - 14, 1978.

following year. I also served in the role as a field observer for The Metropolitan School Study Council and observed school practices in school districts in New Jersey and in Connecticut. In the model described in this paper we would call my role a "participant observer."

Elliott's (1976) work offers a number of important aspects of research interest. As mentioned earlier Elliott's work with a group of forty teachers in the Ford Foundation program resulted in the development of a number of important hypotheses related to the nature of teaching and improvement in one's own teaching practices. Elliott placed strong importance upon what he called self-monitoring ability, that is the process of gathering evidence about one's own behavior from students and others and to use it in a critical, reflective manner. Elliott's methodology borrows heavily from an ethnographic approach and concentrates upon the careful analysis by oneself, by students, and by the participant observer about one's own teaching actions. He used extensively a slide and audio tape method along with verbatim accounts of segments of the teaching. In many ways this methodology resembles a carefully controlled laboratory process. His accounts talk about the problems of bringing both teachers, students and administrators to the point of being able to provide careful, objective and analytic feedback. But curiously he does not make mention of the use of any of the human relations or group process research knowledge that might have aided or facilitated this task. Similarly, there was no indication about the role of instructional development (in this case, inquiry/discovery teaching) as an important aspect of the technical knowledge that would be needed by any participants in the triangulation process.

Despite these criticisms Elliott has, nevertheless, developed a very interesting set of hypotheses about the nature of teaching and the willingness to change one's own teaching practices on the basis of feedback from a variety of sources. Central to these is the tolerance by a teacher to the supposed loss of self-esteem that comes from exposing oneself to the critical observation and analysis of outsiders, namely,

students, other teachers and the participant observer. Related to this are six important variables that form the bases for a large array of hypotheses about changing teacher behavior. These variables are:

1. the relationship between personal identity and professional role
2. the rewards attached to administrative and pastoral roles
3. the commitment to a research identity
4. perceptions of the observer's role as researcher, not evaluator
5. access to the classrooms of other teachers

Three important outcomes or dependent variables were self-monitoring ability, accountability in terms of process values and knowledge outcomes; and the ability to make conscious changes in the teaching role. The paradigm showing the relationship among these variables is presented in Figure 2.

Some of the hypotheses developed by Elliott are as follows:

1. *The less the teacher's personal identity becomes an inextricable part of his professional role in the classroom, the greater is his ability to tolerate losses in self-esteem, which tend to accompany self-monitoring.*
2. *The less that the financial and status reward in school are primarily related to administrative and pastoral[3] roles, the more teachers are able to tolerate losses in self-esteem with respect to classroom practice.*
3. *The more a teacher comes to value himself as a potential researcher, the greater his ability to tolerate losses of self-esteem.*
4. *The more a teacher perceives classroom observers as "researchers" rather than "evaluators" the greater his ability to tolerate losses of self-esteem.*
5. *The more access a teacher has to other teachers' classroom problems the greater the ability to tolerate losses of self-esteem.*

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[3]In American usage we would use such terms as guidance, counselling, or support services.

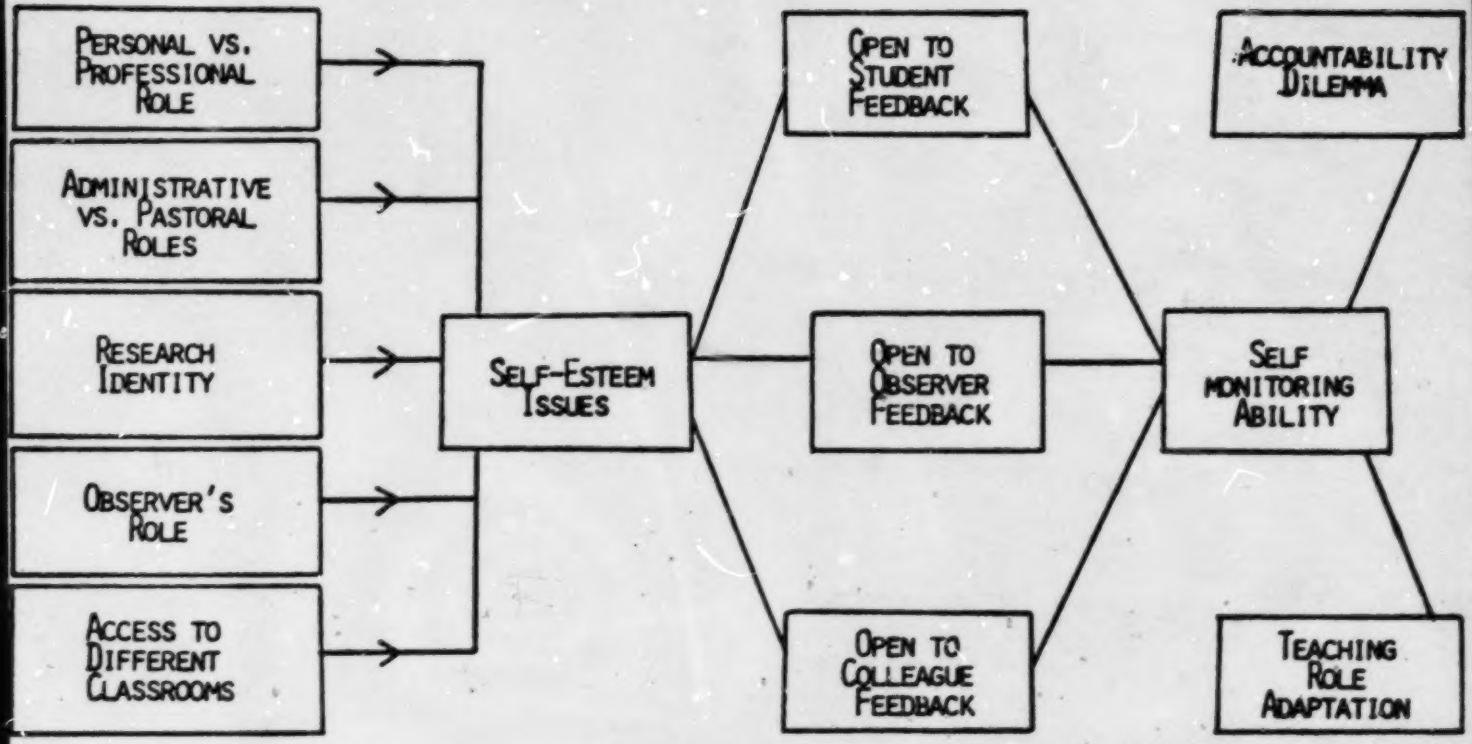

Fig. 2 Elliott's theoretical model showing relationships between variables related to feedback and changes in teacher behaviors. (Elliott, 1976, p. 48)

As a means for helping to develop a coordinated approach to theory, Elliott has organized them sequentially. From the basic hypotheses cited above a set of hypotheses such as the following can be deduced:

THE MORE A TEACHER COMES TO VALUE HIMSELF AS A POTENTIAL RESEARCHER:

_____ *the more open he will become to student feedback*

_____ *the more open he will become to observer feedback*

_____ *the more open he will become to feedback from professional peers*

_____ *the more able he will become at self-monitoring his classroom practice*

_____ *the more he will come to experience a tension between his accountability as an educator for process-values and his accountability to society for knowledge outcomes.*

_____ *the more he will be able to bring about fundamental changes in his practice.*

These hypotheses have been developed from a set of observable behaviors that grew out of the triangulation process. When the entire set has been spelled out (see Elliott, 1976: 44-50) they provide a useful set of propositions which can be empirically tested and which provide greater insight into the nature of producing curriculum change by the classroom teacher. The hypotheses about reward structure, about personal loss of esteem, the self-identity as a researcher, and the non-threatening role of fellow researcher rather than evaluator, all open up important dimensions of changing teacher behavior as a part of in-service education.

Similar sets of hypotheses could well be constructed dealing with the other partners in the triangulation model, namely, school administration, members of the community, and participants from the university.

The above illustrations suggest how the research aspect of the triangulation process can be developed in an in-service education program. It also suggests how field based studies patterned after action research of the early 1950's can be combined with the more tightly developed research paradigm suggested above. What is important, however, is that we not lose the excitement that is generated when the

participants become actively involved in the study and develop a real ownership of the results. At the same time we must develop better research design to deal with the problem of uniqueness of setting so that results can be more generalizable and dissemination of the research knowledge becomes more likely.

SUMMARY

In summary, we have reviewed the curriculum history of action research and found therein a rich history of educational theory and practical application. While action research has been criticized for a lack of rigor and randomness in its design, it more than made up for these deficiencies by demonstrating techniques which reflected the very best knowledge in curriculum development research, group dynamics, and human relations training so that actual change could take place in school settings. The paper called attention to the fact that these developments seemed to stop abruptly in 1957 so that educators currently interested in in-service education need not begin again in a vacuum, but rather could dust off the work that had been developed up to that point and continue on, adapting and modifying with newer work such as that developed by Elliott in the Ford Foundation program in England. The series of research hypotheses developed by Elliott represent prototypes of theory building that can be important for describing and explaining the relationship among the many variables related to in-service education to bringing about changes in teaching practices. The triangulation strategy described in this paper represents an excellent model for participation in action research.

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